

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number
WO 2005/076408 A1

(51) International Patent Classification⁷: **H01Q 3/44**,
15/14, H01P 1/18

(21) International Application Number:
PCT/SE2004/000164

(22) International Filing Date: 10 February 2004 (10.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **TELEFONAKTIEBOLAGET L M ERICSSON (PUBL)**
[SE/SE]; S-126 25 Stockholm (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GEVORGIAN, Spartak** [AM/SE]; Adler Salvius gata 15, S-411 11 Göteborg (SE). **DERNERDY, Anders** [SE/SE]; Kvarnpirsgatan 4, S-417 64 Göteborg (SE).

(74) Agents: **BERGENTALL, Annika** et al.; Cegumark AB, P.O. Box 53047, S-400 14 Göteborg (SE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

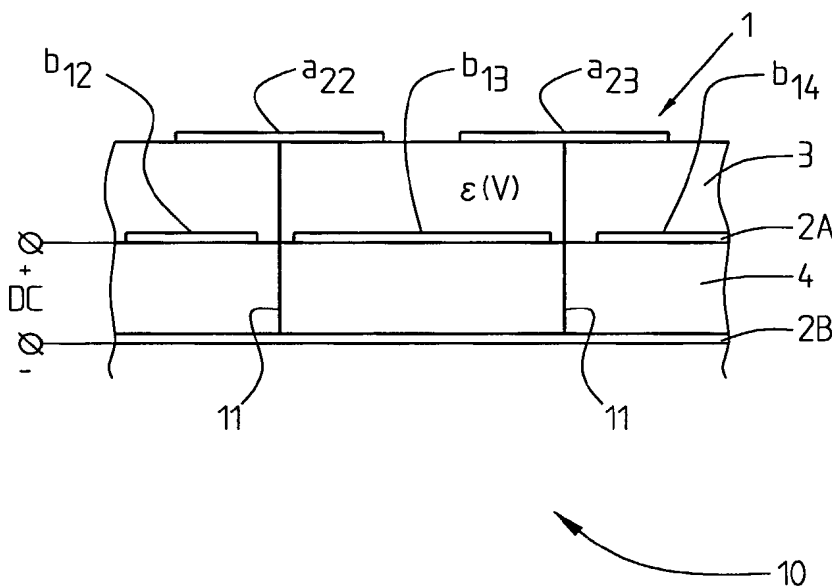
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TUNABLE ARRANGEMENTS



(57) Abstract: The present invention relates to a tunable microwave/millimeter-wave arrangement comprising a tunable impedance surface. It comprises an Electromagnetic Bandgap Structure (EBG) (Photonic Bandgap Structure) comprising at least one tunable ferroelectric layer (3), at least one first, top, metal layer (1) and at least one second metal layer (2A, 2B). Said first (1) and second metal layers (2A) are disposed on opposite sides of the/a ferroelectric layer (3), and at least the first, top, metal layer (1) is patterned and the dielectric permittivity of the at least one ferroelectric layer (3) is dependent on a DC biasing voltage directly or indirectly applied to first (1) and/or second (2A, 2B) metal layers disposed on different sides of the/a ferroelectric layer.

WO 2005/076408 A1